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ABSTRACT

A study examined the changes that occurred in the program offering mixes and outcomes of Massachusetts' Job Training Partnership Act (JTPA) and secondary vocational education programs between 1987 and 1993. Most Massachusetts vocational programs experienced sharp declines in numbers of graduates between 1987 and 1991; however, the distribution and concentration of vocational graduates across schools remained fairly stable. The service mix of Massachusetts' vocational education programs varied considerably among schools depending on local industry mixes and employment opportunities. In view of Massachusetts' near-term employment projections, it was recommended that the school-to-school transition alternative (particularly through tech prep) be strengthened. Massachusetts' JTPA Title IIA adult skills training program experienced nearly a 20% decline in the number of completers between 1990 and 1992. The decreases in number of female completers and completers in the on-the-job training component of JTPA were especially large. Although JTPA adult programs did largely maintain their clerical programs throughout the recession, their nonclerical training program services mix underwent considerable adjustments (including a 10% increase in health occupations). Further research to determine the factors responsible for the decline in JTPA enrollment was recommended. (Appended is a table detailing the percent distribution of secondary vocational education graduates by program.) (MN)

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Massachusetts State Council on Vocational Education

1993

THE RELATION OF EDUCATION AND TRAINING TO THE STATE'S ECONOMIC NEEDS 1987 - 1992

Produced by
The Center for Labor Market Studies
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This report was prepared for the Council under the requirements of Section 112 of the Carl D. Perkins Vocational and Applied Technology Education Act of 1990, Public Law 101-392.

Introduction

The national and state human resource systems, including programs such as the Job Training Partnership Act (JTPA) and the more extensive network of secondary and post-secondary vocational education programs, serve three main roles. The first is that of bolstering the skills and abilities of workers. Since the late 1950s economists have attempted to explain the sources of economic growth, with particular focus on the importance of the contribution of human resource investments to the economic growth and development process of nations. The conclusion of their research efforts has been that the quantity and quality of labor supply are important determinants of total economic output. In other words, current and future economic growth depends in part on employer access to well trained workers in the specific occupational areas they require. And in meeting these needs, workers can help raise the real incomes and living standards of a nation.

The second major economic role of human resource development strategies is that of eliminating structural imbalances between labor supply and labor demand. As the job content of the economy has changed over the years, the educational attainment, academic abilities and occupational proficiencies required of workers by employers has changed considerably. A growing concern has evolved, especially during the 1980s, about the widening deficit between the skills possessed by workers and the increasingly rigorous hiring requirements of employers. Reducing shortages in the labor market, other things being equal, improves labor market efficiency and increases total output. Thus, the ability of national and state human resource systems to foresee occupational changes and produce the required number of trained workers is critical to economic growth.

Third, investments in job training programs, secondary, and post-secondary institutions, are motivated in part by the assumption that program graduates have greater employment opportunities, and higher earnings when employed, than their counterparts without such

credentials. Among other things, improving labor market outcomes with respect to post-program employment and earnings gains should help reduce problems of poverty and income inadequacy. Many educators and some social scientists believe that education also confers non-pecuniary benefits both private and social. Private benefits include such things as higher prestige, a more interesting career, and a more acute awareness and appreciation of life's pleasures. Social benefits of human resource investments include a more literate, well-informed, and healthier citizenry. Effective human resource systems can thus improve the labor market outcomes of individuals.

With respect to the first role of human resource systems, the importance of a well-educated and well-trained workforce in the economic growth and development process is now widely recognized, both in the private sector and in the public sector. Business, labor, the academic community, and the various levels of government have become increasingly aware of the crucial economic role played by a state's stock of "human capital." A recent Weld Administration report titled "Choosing to Compete: A Statewide Strategy for Job Creation and Economic Growth" highlights the importance of workforce quality and adaptability.[1] The report argues that the massive and widespread job losses in Massachusetts have not stemmed solely from weak demand conditions beginning with the recession in 1989. The authors argue that job losses have also occurred because of significant restructuring within firms who have either reorganized their production processes in an effort to improve productivity and remain competitive, or who have scaled back employment as a result of structural changes in the demand for goods, such as defense related industries. The authors contend that such restructuring along with changes in the industrial mix of goods and services produced require an effective human resource system capable of producing an adaptable, well-trained workforce.

The MassJobs Council, headed by Lt. Governor Cellucci, which has responsibility for human resource policy under the Weld Administration, has identified a number of problems with the human resource system as it now exists in Massachusetts. Included among these limitations are the contentions that the system is a fragmented compilation of many programs operating more

or less separately from one another, that it serves the short-term needs of participants rather than the long-term needs of the workforce and the economy, that there is little or no information concerning the education and training services available, and that the effectiveness of programs is poorly evaluated. The Council identifies another important limitation of the human resource system, namely that program offerings are not often enough determined by the needs of employers in specific industry segments within the state. Instead, the types of programs available, and thus the occupations in which manpower are trained, are often determined by Federal requirements or by the capabilities of existing education and training institutions. Such "supply oriented" programs are thought to be much less responsive to the education and training needs of Massachusetts employers.

The notion of specificity is a major theme of the Choosing to Compete report. In order to be effective, the report argues, policies designed to heal the economic woes of Massachusetts must account for specific regional and industrial developments within the state. In terms of manpower policy, "workers must be given specific skills relevant to the needs of particular industries. One of the primary objectives of the MassJobs Council is ensuring that training programs can be delivered on an industry-specific basis." More succinctly, the report states that there is a "desperate need for industry-specific training."

Our examination focuses upon the way that the program offering mixes of both the JTPA and secondary vocational education programs have changed over a five to six year period. The period of time chosen to study these programs, while most immediate, is one characterized by extraordinary employment decline in the state. Between December of 1988 and early 1993 the state endured its worst economic recession since the Great Depression as more than 400,000 jobs were lost in Massachusetts over the four year period. Moreover, every major industrial sector in the state economy experienced substantial job loss. These losses adversely impacted virtually every occupational area in the state economy and, in turn, most components of the education and training system.

One of the difficulties that occurs during economic recessions is the almost complete collapse of signals in the labor market concerning occupational and industrial areas of employment opportunity. During the full employment era of the 1980s, high school and college students, labor market re-entrants, and others in job market transition had fairly clear signals about the employment prospects associated with alternative career fields. Strong employment opportunities in construction, finance, and health helped many youngsters and adults decide on their high school and college courses of study. These same signals were also available to planners and policy makers to guide them in developing appropriate occupational services mix strategies for their clients.

During the economic recession, though, these signals have virtually disappeared. Rather than an economic environment of expanding employment and rising wages in alternative career fields, the state economy has been characterized by extraordinary job loss across virtually every industrial sector (with the important exception of health services). In this context of massive job decline the labor market largely failed to signal job seekers, high school and college students, as well as human resource program managers about areas with strong career potential.

The diminution of the labor market signalling process has led to a variety of adjustments on the part of those making education and training investment decisions. For example, among those individuals who were recent recipients of bachelor's degrees, the rate of full-time enrollment in graduate programs appears to have increased considerably. Between 1988 and 1992 total graduate enrollment in Massachusetts colleges and universities increased by 28 percent. In our view a substantial number of these recent college graduates chose graduate school since immediate career related employment prospects were not good. Thus the opportunity cost (in foregone earnings) of an additional year of schooling was reduced. In practical terms, graduate programs became attractive "safe havens" for recent graduates who observed poor employment opportunities. For them, schooling served to delay their career transition, while adding to their long term employability at reduced cost.

This type of adjustment occurred not only among recent college graduates, but also among completers of vocational-technical programs in the state. As we will discuss in greater detail below, a growing proportion of vocational-technical program completers enrolled in post-secondary programs during the economic recession. Like their counterparts with bachelor's degrees, these youngsters sought to delay their school to career transition given the poor labor market environment, while simultaneously enhancing their long term employability. Once again, poor job prospects, reduced opportunity costs, and a ready pathway to college (in the form of Tech-Prep programs) altered the school-going behavior of recent vocational-technical school graduates.

In contrast, JTPA programs, driven primarily by post-program employment and earnings measures, had a more difficult time adjusting to external economic conditions. The JTPA performance measurement system provides no rewards for further schooling activity. In fact, the new JTPA national funding formula may actually reduce funding to states with JTPA programs that enroll large shares of participants in school.[2]

In an effort to gauge the effectiveness of the state's human resource system in supporting economic development efforts, this report examines two key components of the human resource system in Massachusetts, the secondary vocational education system and the programs operating under the Job Training Partnership Act (JTPA).

Secondary Vocational Education

In this section of our report we focus on the secondary vocational education system in Massachusetts. The analysis, covering each year over the 1987-1991 period, includes all secondary vocational education schools that received funding under Chapter 74 of the Perkins Act.

Between 1987 and 1991, the total number of secondary vocational education schools granting degrees in Massachusetts declined from 106 in 1987 to 95 by 1991 (Table 1). Of the eleven schools that conferred degrees between 1987 and 1990 but did not confer any degrees in 1991, ten were comprehensive public high schools who closed their programs. Thus, as the economy moved into recession, the total capacity of the state's secondary vocational-technical system declined with 11 programs closing in just five years. Interestingly, nearly all of the graduates from these programs specialized in General Marketing. Over the same time period, the number of graduates from secondary vocational education institutions declined by about 15 percent, from 10,272 graduates in 1987 to 8,735 graduates by 1991 (Table 1). The elimination of the vocational-technical curricula from these 11 secondary schools only accounted for 188 students, or about 12 percent of the 1,537 drop in the number of graduates from vocational-technical programs in Massachusetts.

Most Chapter 74 funded secondary vocational education institutions, while continuing to offer occupational education programs, witnessed sharp declines in the number of graduates between 1987 and 1991. Of the 106 schools with vocational-technical graduates in 1987, 81 schools, or 76 percent, experienced declines in the number of graduates by 1991. The schools experiencing the largest absolute decline over this time period were Boston public schools, Shawsheen Technical Vocational School, and Norwood public schools, which saw declines in their vocational-technical graduates of 133, 101, and 83, respectively. At the same time, though, certain schools did experience increases in the number of graduates. The three leading schools in

terms of increases in the number of graduates were public schools in Middleborough and Holyoke, and Montachusett Vocational Technical School, posting gains of 52, 48, and 33 graduates, respectively.

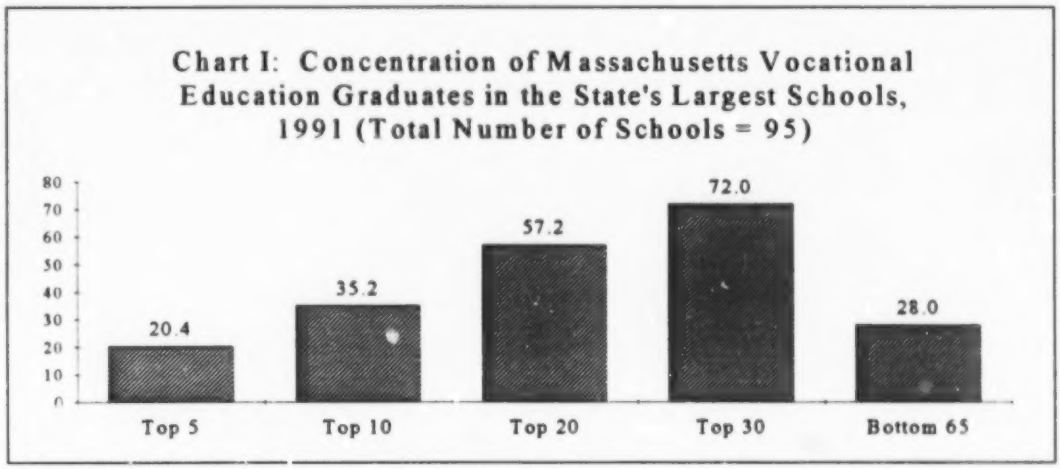
Table 1: Trends in the Number of Chapter 74 Supported Secondary Vocational Education Schools and Secondary Vocational Education Graduates in Massachusetts, 1987-1991

Year	Number of Schools	Number of Graduates
1987	106	10,272
1988	104	9,865
1989	104	9,255
1990	99	8,842
1991	95	8,735
Absolute Change, 1987-1991	-11	-1,537
Percent Change, 1987-1991	-10.4%	-15.0%

There are many forces which influence the number of vocational education graduates over time including demographic trends, which are shaped by birth rates, mortality rates, and migration, and determine the total number of secondary school-aged persons in the state. In fact, over the 1987-1991 period, the total number of high school seniors in the state declined by about 17 percent. Thus, the decline in the number of vocational-technical graduates was roughly proportionate to the decline in the total number of seniors in the state, and therefore may be due only to the changing size of the age cohort.

Although there have been declines in the number of secondary vocational education schools and graduates, the distribution and concentration of graduates across schools has remained fairly stable. The thirty largest vocational education schools in the state conferred 72 percent of vocational-technical diplomas in 1991, while the other 28 percent of graduates received diplomas from the remaining sixty five schools (Chart I). For each year between 1987 and 1991,

five schools accounted for roughly 20 percent of the total number of degrees conferred (Table 2). The four largest secondary vocational education schools in the state over the 1987-1991 period, were Greater Lowell, Worcester Vocational Technical, Greater New Bedford, and Southeastern Voc Tech. Ranking fifth were Shawsheen Technical (1987-89), Assabet Valley (1990), and Greater Lawrence (1991).



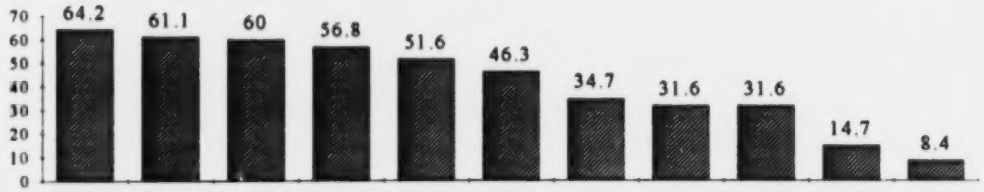
Similarly, roughly one-third of the state's secondary vocational education graduates received degrees from the ten largest schools, while well over one-half got degrees from the twenty largest vocational-technical schools in the state. These findings clearly reveal that net new labor supply from vocational-technical programs is highly concentrated in a relatively small number of educational institutions.

Table 2: Trends in the Fraction of Chapter 74 Secondary Vocational Education Graduates from the Largest Schools in the State, Massachusetts, 1987-1991

Year	Top 5	Top 10	Top 20	Top 30
1987	19.2%	33.2%	54.2%	68.5%
1988	18.9%	33.2%	53.7%	67.4%
1989	18.7%	33.6%	54.0%	68.3%
1990	19.5%	34.2%	56.1%	70.0%
1991	20.4%	35.2%	57.2%	72.0%

The services mix of the state's vocational-technical programs varies considerably among schools. No two vocational-technical programs look alike. Even at the two-digit Classification of Instructional Programs (CIP) code level, only about 6 of every 10 secondary vocational education schools had graduating seniors in precision production, mechanics/repairers, construction, and marketing/distribution programs (Chart II). About half of the schools graduated students in vocational home economics and engineering/engineering-related technologies, and roughly one-third offered concentrations in consumer/personal/miscellaneous services (made up exclusively of cosmetology), computer/information sciences, and allied health. Degrees in agribusiness and agricultural production were awarded by about 15 percent of the secondary vocational education schools in Massachusetts. These findings suggest a fairly high degree of specialization among vocational-technical programs in the state. Part of this division of services and specialization of functions may be associated with the relatively high financial outlays for physical plant and equipment within any given specialty area, together with faculty and staff specialization in subject disciplines. Additionally, this specialization may be associated with variation in local industry mix and resultant employment opportunities.

Chart II: Percent of Massachusetts Chapter 74 Secondary Vocational Education Schools Offering Occupational Specialities, by Program Speciality, 1991



While the total number of graduates in vocational-technical programs declined by about 15 percent, the services mix changed only slightly over the period. In general, as enrollment

declined, programs were eliminated. Findings in Table 3 reveal that programs were both added and dropped in most fields over the period

Table 3: Trends in the Number and Percent of Secondary Vocational Education Schools Offering an Occupational Specialty, by Program, Massachusetts, 1987-1991

Program	1987	1988	1989	1990	1991
Agribusiness/Agricultural Production					
Number Offering	16	16	16	15	14
Percent Offering	15.1%	15.4%	15.4%	15.2%	14.7%
Marketing and Distribution					
Number Offering	67	62	63	58	54
Percent Offering	63.2%	59.6%	60.6%	58.6%	56.8%
Computer and Information Sciences					
Number Offering	27	29	28	31	30
Percent Offering	25.5%	27.9%	26.9%	31.3%	31.6%
Consumer, Personal, and Misc. Services					
Number Offering	33	33	33	33	33
Percent Offering	31.1%	31.7%	31.7%	33.3%	34.7%
Eng. and Eng. Related Services					
Number Offering	49	46	47	44	44
Percent Offering	46.2%	44.2%	45.2%	44.4%	46.3%
Allied Health					
Number Offering	32	32	32	33	30
Percent Offering	30.2%	30.8%	30.8%	33.3%	31.6%
Vocational Home Economics					
Number Offering	48	49	50	50	49
Percent Offering	45.3%	47.1%	48.1%	50.5%	51.6%
Construction Trades					
Number Offering	58	59	59	60	57
Percent Offering	54.7%	56.7%	56.7%	60.6%	60.0%
Mechanics and Repairers					

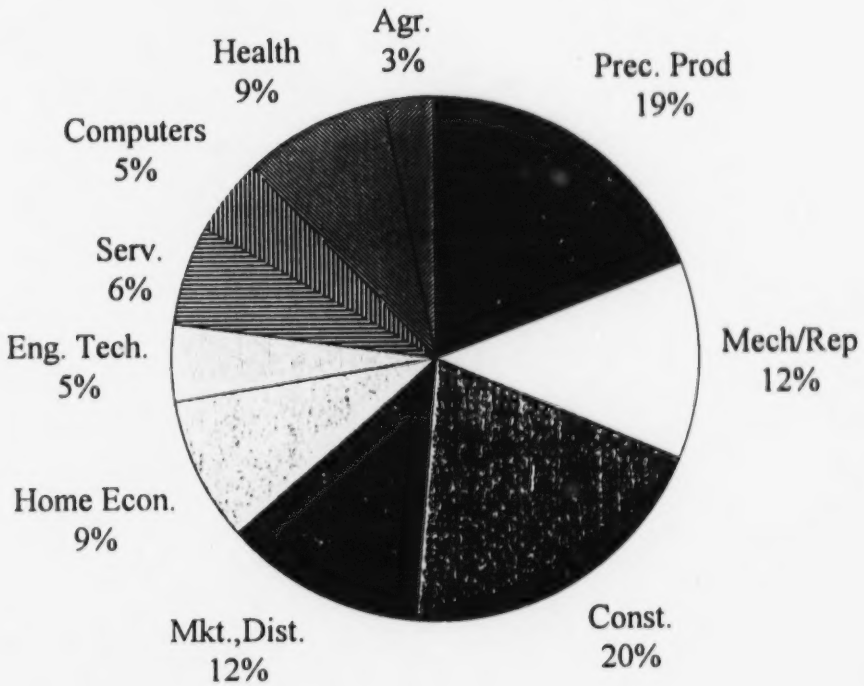
Number Offering	60	60	60	60	58
Percent Offering	56.6%	57.7%	57.7%	60.6%	61.1%
Precision Production					
Number Offering	63	62	62	61	61
Percent Offering	59.4%	59.6%	59.6%	61.6%	64.2%
All Other					
Number Offering	7	7	7	7	8
Percent Offering	6.6%	6.7%	6.7%	7.1%	8.4%

The Occupational Structure of Completions

Turning our attention to secondary vocational education graduates rather than schools, the relatively stable nature of program offerings is also reflected in the distribution of graduates across program areas. The 1987-1991 average percentage distribution of graduates is displayed in Chart III. On average over the entire 1987-1991 period, more than half of all secondary vocational education graduates were trained in precision production fields, as mechanics/repairers, or in construction trades. Within precision production, graduates were spread across a number of specific areas, such as machine tool operation, graphic and printing communications, and drafting (see Appendix A). The great majority of graduates in the mechanics/repairers areas were trained as auto mechanics (51 percent), auto body repairers (26 percent), and heating, air conditioning, and refrigeration mechanics (11 percent). In the construction trades, graduates were mostly trained as carpenters (39 percent), electricians (33 percent), and plumbers (13 percent).

Virtually all of the marketing/distribution graduates majored in general marketing. Graduates in home economics were concentrated in food production, management, and services (63 percent), although a fairly high fraction were also found in child care (14 percent), clothing production, management, and services (10 percent), and chefs/cooks (9 percent). Roughly 90 percent of graduates in engineering/engineering-related technologies majored in electronic technology, while all graduates in consumer, personal, and miscellaneous services were trained in cosmetology.

Chart III: Percent Distribution of Secondary Vocational Education Graduates, Average 1987 to 1991



Persons receiving degrees in computer and information sciences specialized in computer programming (72 percent), data processing (16 percent), and information sciences and systems (11 percent). Within allied health, graduates were concentrated in practical nursing (38 percent), community health work (25 percent), nursing assisting (14 percent), physician assisting (11 percent), and dental assisting (7 percent).

As previously mentioned, the distribution of secondary vocational education graduates has changed only slightly over the 1987-1991 period (Chart IV). The most marked changes in the distribution were declines in the fraction of graduates majoring in marketing/distribution and engineering/engineering-related technologies and increases in the fraction majoring in allied health and the construction trades.

It was noted earlier that the total number of secondary vocational education graduates declined sharply over the 1987-1991 period. To assess the implications of this decline for the employers who require a trained pool of labor, it is necessary to disaggregate the net change in the number of graduates into specific occupational areas. Findings presented in Chart V and Table 4 reveal the sources of the net decline in the number of graduates.

Chart IV: Percent Distribution of Massachusetts Secondary Vocational Education Graduates, by Program, 1987 and 1991

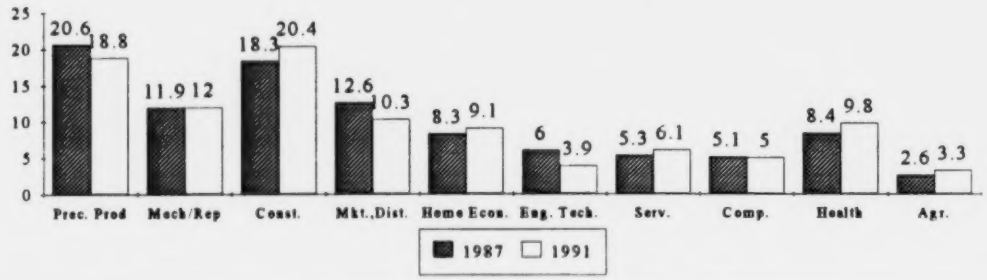
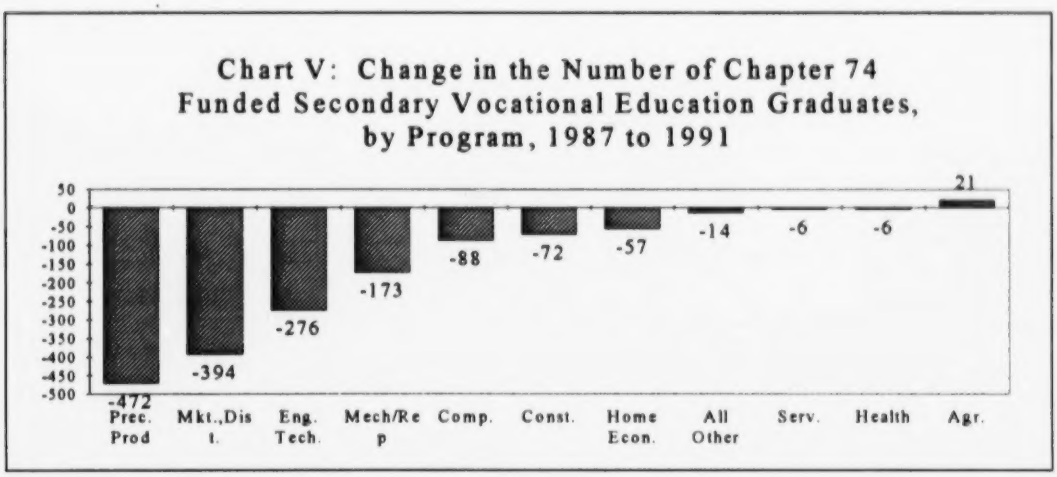


Table 4: Net Change in the Number of Chapter 74 Funded Secondary Vocational Education Schools, Share of Change, and 1987-1991 Share of Graduates, by Program, Massachusetts, 1987-1991

Program	(A) Net Change in Number of Graduates	(B) Share of Change	(C) Distribution of Grads, 1987-91	(D) Col. B Div. Col. C
Total	-1,537	100.0%	100.0%	1.00
Precision Production	-472	-30.7%	19.3%	1.59
Marketing and Distribution	-394	-25.6%	12.2%	2.10
Eng. and Eng. Related Technical.	-276	-18.0%	4.7%	3.83
Mechanics and Repairers	-173	-11.3%	12.0%	0.94
Computer and Information Sciences	-88	-5.7%	4.9%	1.16
Construction Trades	-72	-4.7%	19.9%	0.24
Vocational Home Economics	-57	-3.7%	8.8%	0.42
All Other	-14	-0.9%	0.9%	1.00
Consumer, Personal, and Misc. Serv.	-6	-0.4%	5.9%	0.07
Allied Health	-6	-0.4%	8.6%	0.05
Agribusiness/Agricultural Production	+21	+1.4%	3.0%	0.47

Nearly 86 percent of the decline in the total number of graduates was due to declines in precision production, marketing/distribution, engineering/engineering-related technologies, and mechanics/repairers. Proportionately, programs in engineering/engineering-related technologies suffered the most severe declines. On average, these programs accounted for only 4.7 percent of the graduates, yet their share of the total decline over the period was 18 percent. Similarly, the marketing/distribution program area graduated roughly 12 percent of degree recipients, although 26 percent of the net decline in the number of graduates came from this area. The largest drop in the number of graduates occurred in precision production, which accounted for 31 percent of the total decline. Programs in the construction trades saw their share of all graduates increase over the 1987-1991 period, although the total number of graduates in the construction trades actually

fell slightly. The construction trades accounted for only 5 percent of the net decline in the total number of graduates between 1987 and 1991.

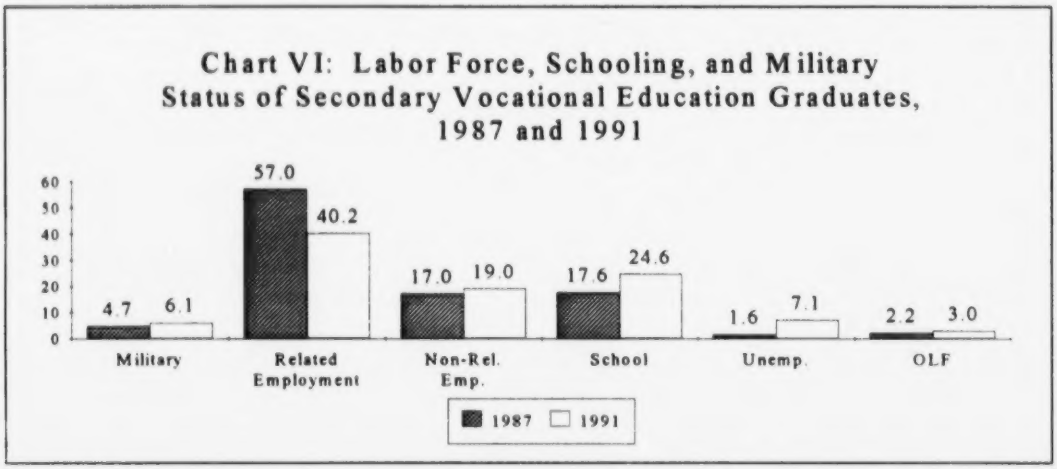


Secondary Vocational Education
Graduate Outcomes

The economic recession in Massachusetts over the past four years has had powerful impacts on a variety of key measures of economic and social well-being. One major labor market development, a longer term development which has been magnified during the recession, has been a dramatic change in the composition of employment across industries and occupations. As previously discussed in this report, changes in the industrial distribution of employment and changes in occupational staffing patterns within industries have combined to alter the employment opportunities available to the population.

Structural and cyclical changes in labor market conditions not only have an effect on economic and social well-being, but also have a profound influence on the employment and schooling decisions of individuals, particularly persons who have recently completed an education or training program. Individuals make decisions concerning labor market participation, the intensity of job search, and the amount of work effort supplied to the labor market based in part on the array of opportunities available. They also decide whether to pursue additional education,

and if so, how much, in which field, and whether to attend full-time or part-time based on these same labor market signals. Although these decisions are influenced by longer-term social and economic change, they are also very sensitive to short-run cyclical changes in the economy.



Findings appearing in Table 5 and Chart VI reveal the substantial changes in the labor force, schooling, and military status of secondary vocational education graduates over the 1987-1991 period. First, the fraction of vocational-technical graduates employed in a job related to their field of study in Massachusetts was more than double that reported for vocational-technical students in the nation as a whole.[3] The fraction of graduates employed in a job related to their area of study was roughly 58 percent for the years 1987 and 1988, but fell considerably beginning with the recession in 1989. By 1991, only 40 percent of all vocational-technical graduates were employed in a job related to their major. Importantly, the sharp declines in training-related employment were in large part not offset by employment that was unrelated to their occupational field of study. The fraction of graduates employed in a job unrelated to their major increased modestly, from about 17 percent between 1987 and 1989 to 19 percent from 1990 to 1991. The military also absorbed a slightly larger share of graduates in 1991 as compared to 1987, a trend which seems unlikely to continue given sharp cutbacks in military staffing levels.

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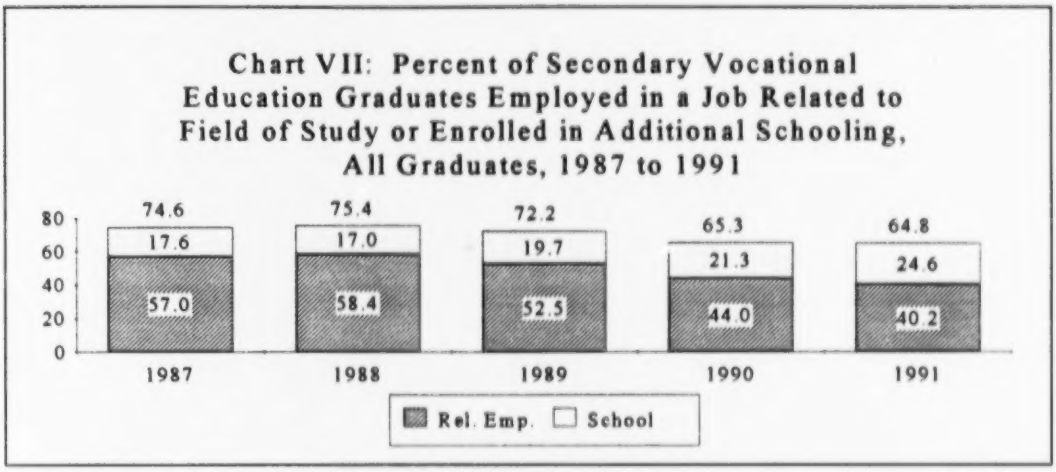
Table 5: Labor Force Status, Schooling, and Military Status of Secondary Vocational Education Graduates, 1987-1991

Status	1987	1988	1989	1990	1991
Military	4.7%	4.5%	4.5%	6.2%	6.1%
Related Employment	57.0%	58.4%	52.5%	44.0%	40.2%
Non-Related Employment	17.0%	16.4%	17.2%	19.0%	19.0%
Additional Education	17.6%	17.0%	19.7%	21.3%	24.6%
Unemployed	1.6%	1.7%	3.4%	6.5%	7.1%
Out of Labor Force	2.2%	1.9%	2.8%	3.0%	3.0%

The share of graduates who reported being unemployed increased considerably over the period. In the full employment year of 1987 fewer than 2 percent of all completers were unemployed one year after graduation. However, as employment declines mounted, the proportion of recent vocational-technical graduates that were unemployed increased to over 7 percent. It is clear that graduates of secondary vocational education programs have not been immune to the unemployment consequences that the recession has had on the work force.

Findings in Chart VII clearly reveal that the major adjustment made by vocational-technical program completers to the deteriorating labor market conditions was to increase their college-going activity. The fraction of vocational education graduates pursuing additional education increased markedly between 1987 and 1991, from roughly 17 percent in 1987-1988 to nearly 25 percent by 1991. This shift towards additional schooling was driven by two forces. First, poor employment prospects due to the recession reduced the employment and earnings gains associated with immediate entry into the job market. These conditions caused many young graduates to delay their transition into the job market and, in effect, "pushed" vocational-technical students into post-secondary programs.

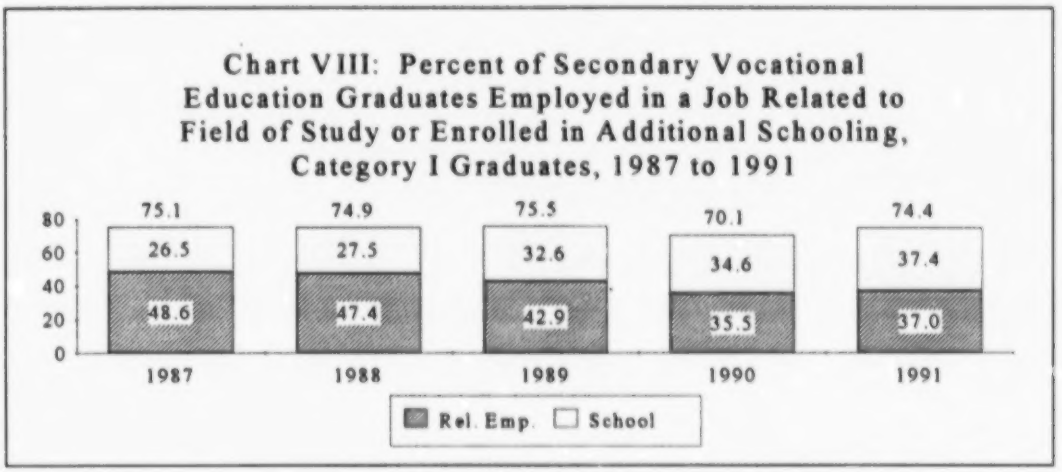


Second, many secondary and post-secondary schools have collaborated to create "Tech Prep" programs which are designed to broker secondary school graduates into post-secondary educational institutions. These programs provide for articulation agreements between secondary and post-secondary educational institutions that, among other things, specifically prepare vocational students for post-secondary study, primarily in the state's public and private two-year colleges. Thus, the Tech Prep program has begun to develop a formal pathway to college for graduates of our state's secondary vocational-technical programs. The development of a widespread Tech Prep program in the state has led to a "pull effect" for vocational-technical graduates to enroll in the state's public and private colleges.

In summary, the substantial decline in training-related employment among graduates over the recession was not offset by increases in non-related employment and service in the military. Rather, like their counterparts with bachelor's degrees, recent vocational-technical graduates adjusted to declining employment opportunities in part by opting for additional years of schooling.[4] Consequently, despite the sharp deterioration in labor market conditions in Massachusetts since 1988, the deterioration in the positive outcome performance of the state's secondary vocational-technical programs was cushioned by a rising share of graduates who enrolled in post-secondary educational programs. In 1987, about 75 percent of all graduates were

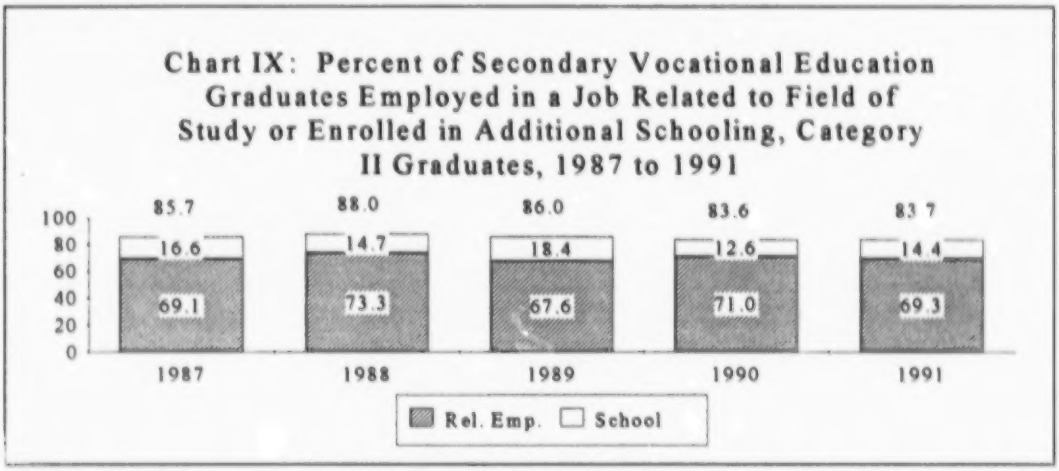
either employed in a field related to their area of study or enrolled full-time in a post-secondary educational institution. By 1991, despite extraordinary job loss, 65 percent of the class of 1991 was employed in a related job or in school one year after graduation.

The overall averages outlined in Table 5 and Chart VI, although clearly indicative of general trends, mask significant differences in outcomes across program areas. In terms of successfully making the transition from school to work, or from secondary school to post-secondary school, program areas can be divided into three broad categories. The first contains graduates who, although hit hard by the recession as measured by declining training-related employment and increasing unemployment and non-participation problems, were able to pursue further schooling and thus "wait out" the recession in school. This first category contains graduates in marketing/distribution, computer/information sciences, and home economics. Findings in Chart VIII reveal that students completing programs in these fields already were enrolling in post-secondary programs at relatively high rates. For example, among the class of 1987 more than 26 percent of graduates in Category I fields were enrolled full-time in a post-secondary educational program. Thus, these student had post-secondary enrollment rates that were well above the secondary vocational-technical system average of 17.6 percent in that year. As the effects of the recession became more pronounced and training-related placement performance deteriorated, post-graduate enrollment rates among this group of graduates rose quite rapidly. By 1991, more than 37 percent of graduates from Category I vocational-technical programs were enrolled in school. The result is that the overall post-graduation performance of students in these programs did not deteriorate. Throughout the entire five year period about 75 percent of these graduates were either employed in a training-related job or enrolled in school.



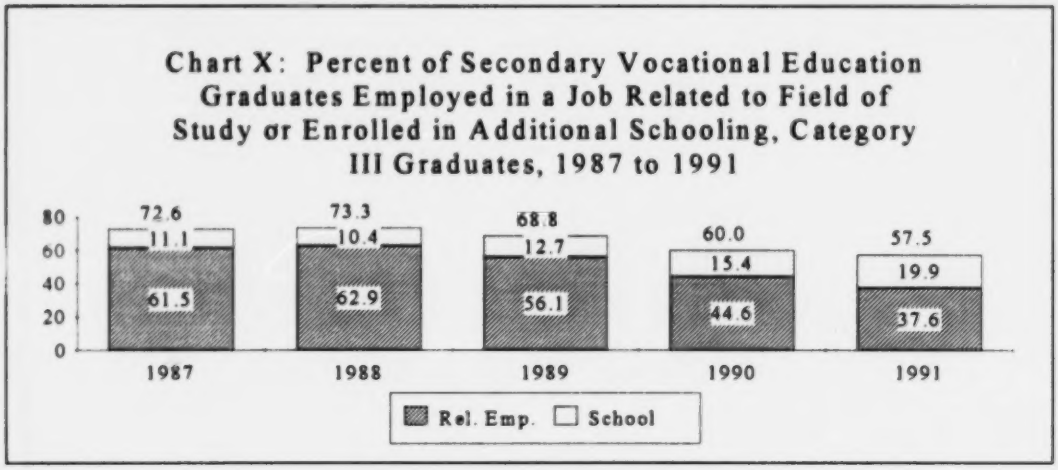
The second category is characterized by little change in training-related placement levels over the 1987-1991 period. The only graduates to fall into this category are those in the allied health professions. Many of these graduates were actually high school graduates who had returned to the secondary vocational system for additional occupational education. Unlike virtually every other industrial segment of the Massachusetts economy, employment in the health industry grew quite rapidly between 1988 and 1993. While total employment in the state fell by more than 12 percent over the past four years, the number of jobs in the health sector increased by more than 10 percent. More than 45,000 jobs were created in the health industry while the balance of the state's labor market deteriorated badly.[5] As findings in Chart IX reveal, this strong labor demand resulted in continuously high training-related placement rates over the entire course of the recession. In each year between 1987 and 1991, the training-related employment rate for graduates of secondary vocational-technical programs remained at a very high 70 percent. In each year 12 to 18 percent of all graduates opted to attend school. Unlike most other vocational-technical programs, post-secondary school enrollment rates did not rise for graduates of allied health programs. Strong employment prospects in the state's health industry made an immediate transition from school to work attractive to graduates of these programs. Like Category I programs, the secondary allied health vocational-technical programs included in Category II were also able to achieve high overall performance. In each year from 1987 and 1991, between 83 and

88 percent of allied health graduates worked in a related job or were enrolled full-time in school one year after graduation.



The final category contains graduates in occupational areas where training-related placement rates declined considerably, but were not sufficiently offset by increases in post-secondary enrollment rates to maintain their overall level of performance over the course of the recession (Chart X). These graduates had the most difficult time making the transition from school to work, since the industries that usually employed graduates from these fields experienced sharp employment losses over the recessionary period. Graduates receiving degrees in cosmetology, construction, mechanics/repairers, and precision production constitute this group. Unlike Category I and Category II programs, Category III programs experienced considerable deterioration in their overall performance between 1987 and 1991. In 1987 about 72 percent of all Category III completers were employed in a related job or in school one year after graduation. By 1991 this share had fallen to 57.5 percent. Thus, most of the overall decline in secondary vocational-technical program performance over the recession was concentrated among Category III programs. This deterioration in performance is the result of the training-related employment rate declining from 61.5 percent in 1987 to 37.6 percent in 1991. While training-related employment declined precipitously, school-going rates did not rise correspondingly. Unlike

Category I programs where employment losses were offset by increased school-going activity, Category III program graduates did not increase their school-going rates sufficiently to compensate for the decline in training-related employment opportunities. Part of the reason that school-going rates remained low for graduates of Category III programs may be associated with quite limited post-secondary offerings in these fields.



Findings presented in Table 6 display the labor force status, schooling and military status for each of the three groups over the 1987-1991 period.

Table 6: Labor Force Status, Schooling, and Military Status of Secondary Vocational Education Graduates, by Program Area, 1987-1991

Program Area/Status	1987	1988	1989	1990	1991
Category 1					
Marketing/Distribution					
Military	5.8%	5.2%	3.6%	5.2%	4.8%
Related Employment	48.2%	47.3%	42.5%	34.9%	36.3%
Non-Related Employment	11.5%	12.9%	14.8%	12.5%	7.6%
Additional Education	30.1%	29.7%	32.3%	38.0%	44.0%
Unemp./Out of Labor Force	4.4%	4.9%	6.8%	9.4%	7.2%

Computer/Info. Sciences					
Military	1.6%	3.0%	2.0%	3.0%	4.1%
Related Employment	48.7%	44.7%	36.1%	32.6%	28.5%
Non-Related Employment	12.0%	10.6%	11.1%	18.6%	14.0%
Additional Education	32.1%	39.0%	47.6%	35.5%	41.6%
Unemp./Out of Labor Force	5.5%	2.7%	3.1%	10.3%	11.7%
Home Economics					
Military	4.0%	3.4%	3.9%	4.8%	3.7%
Related Employment	49.2%	48.8%	47.2%	38.1%	43.0%
Non-Related Employment	21.3%	25.0%	17.5%	18.6%	14.4%
Additional Education	17.6%	18.4%	25.1%	29.6%	26.8%
Unemp./Out of Labor Force	7.9%	4.3%	6.4%	9.1%	12.0%
Category 2					
Allied Health					
Military	0.0%	0.7%	0.7%	1.1%	0.3%
Related Employment	69.1%	73.3%	67.6%	71.0%	69.3%
Non-Related Employment	9.4%	7.4%	7.5%	7.6%	7.4%
Additional Education	16.6%	14.7%	18.4%	12.6%	14.4%
Unemp./Out of Labor Force	4.8%	3.9%	5.8%	7.6%	8.5%
Category 3					
Services (Cosmetology)					
Military	0.0%	0.5%	0.5%	0.2%	1.6%
Related Employment	66.0%	66.0%	67.6%	63.2%	54.4%
Non-Related Employment	19.8%	18.4%	15.0%	15.8%	17.8%
Additional Education	8.6%	6.9%	7.8%	10.4%	11.2%
Unemp./Out of Labor Force	5.6%	8.2%	9.1%	10.3%	15.1%
Construction					
Military	5.6%	5.1%	6.5%	9.8%	9.3%
Related Employment	69.2%	69.9%	55.1%	41.2%	35.6%
Non-Related Employment	15.3%	15.3%	22.3%	27.1%	27.7%

Additional Education	8.0%	7.1%	10.9%	12.7%	19.0%
Unemp./Out of Labor Force	1.8%	1.6%	5.3%	9.2%	8.5%
Mechanics/Repairers					
Military	6.6%	6.3%	4.8%	8.8%	9.1%
Related Employment	61.4%	63.9%	64.0%	49.9%	42.3%
Non-Related Employment	19.8%	20.1%	18.1%	19.5%	22.0%
Additional Education	9.3%	7.7%	8.5%	12.6%	16.1%
Unemp./Out of Labor Force	1.9%	2.1%	4.5%	9.1%	10.4%
Precision Production					
Military	5.4%	5.4%	5.8%	6.4%	7.5%
Related Employment	53.4%	54.8%	48.9%	38.7%	31.2%
Non-Related Employment	22.5%	20.3%	19.5%	22.3%	24.2%
Additional Education	15.5%	16.2%	18.6%	22.3%	26.4%
Unemp./Out of Labor Force	3.2%	3.2%	7.2%	10.4%	10.8%

A major shortcoming of secondary vocational-technical programs in the past has been their inability to offer their graduates alternatives to training-related jobs upon graduation. Particularly during times of economic recession, vocational-technical programs have experienced great difficulty in achieving a strong overall performance for their programs. However, our findings suggest that in the current economic recession, ready access to post-secondary education has in fact become an important alternative for recent graduates of the state's vocational-technical programs. By 1991, more than one in four graduates was enrolled in a full-time college program. As the job content of the economy continues to change in such a way as to favor those with additional years of schooling, it is important that the secondary vocational-technical system in the state continue to build pathways to college as well as directly to the job market. In order to achieve these goals we recommend that over the next few years the services mix of the secondary vocational-technical system shift away from Category III programs, especially the construction trades, that appear to offer somewhat limited post-secondary access and reduced training related

employment prospects and shift the program mix toward those programs that provide enhanced school to school as well as school to work options for their graduates. Slow anticipated expansion in the state's construction sector, limiting future training-related employment prospects for graduates in these areas, also signals the need for a shift of resources away from programs designed to serve these industries over the next few years.

Near term projections of employment suggest essentially little net new job creation in the state through 1995.[6] If these forecasts hold true then it is unlikely that training-related employment rates will rise very sharply over the next few years. Therefore, initiatives to strengthen the school to school transition alternative, particularly through the growing Tech-Prep programs across the state, should be undertaken.

Massachusetts JTPA Program Developments

The central mission of the Job Training Partnership Act (JTPA) of 1982, which succeeds the Comprehensive Employment and Training Act (CETA) as the nation's largest employment and training program, is to prepare unskilled and economically disadvantaged youth and adults for successful entry into the labor force. The program was designed so as to lessen the direct involvement of the federal government in program operations and place the majority of the responsibility for such programs on individual states.

A fundamental objective of the JTPA program design was to better meet state and local labor needs through a localized delivery system that was guided by the private sector. Private Industry Councils (PICs) were created to provide local employment and training programs with improved direction about the types of basic skill proficiencies and occupational skills training best suited to local employer labor requirements. The PICs not only give advice about the types of training programs that should be developed by local SDAs, they also have authority to approve or disapprove of any program that is funded under any of the JTPA program provisions. Thus, the JTPA program was designed to empower the local private sector to reorient the local employment and training program to better meet private sector needs.

While parts of the JTPA legislation appear to give local PICs and SDAs considerable latitude in allocating employment and training resources, in fact, their ability to exert major influence on local funding priorities are considerably circumscribed. The performance measurement system that was implemented under JTPA during the 1980s had substantial influence on the types of programs operated under the program. These standards were mandatory targets that provided monetary awards for successful programs and sometimes took action against program providers that performed poorly. One long time observer of local human resource programs remarked that "JTPA's meager resources and the Labor Department's emphasis on

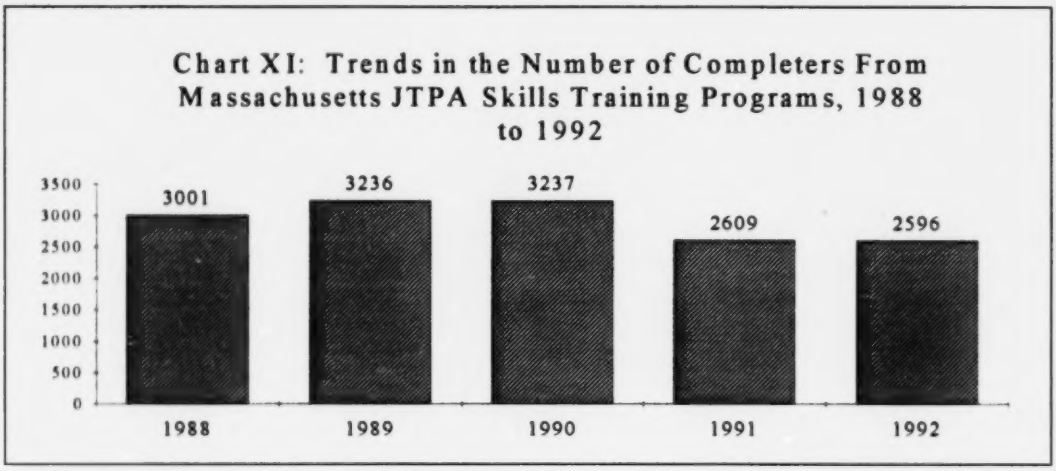
performance standards may more significantly influence operations than the enhanced business roles."

Despite these potential limitations, Section 141 of the Act states that "Training is to be provided only for those occupations in demand in the local area or in an area in which the individual is willing to relocate." The purpose of this report is to examine the extent to which skill training programs under JTPA in Massachusetts did indeed focus upon "demand" occupations. In order to conduct such an analysis, we will examine information on JTPA program completers in Massachusetts. By analyzing these data by occupational area over time we can begin to see how JTPA programs as an institutional source of labor supply have changed in response to changing state and local labor market developments.

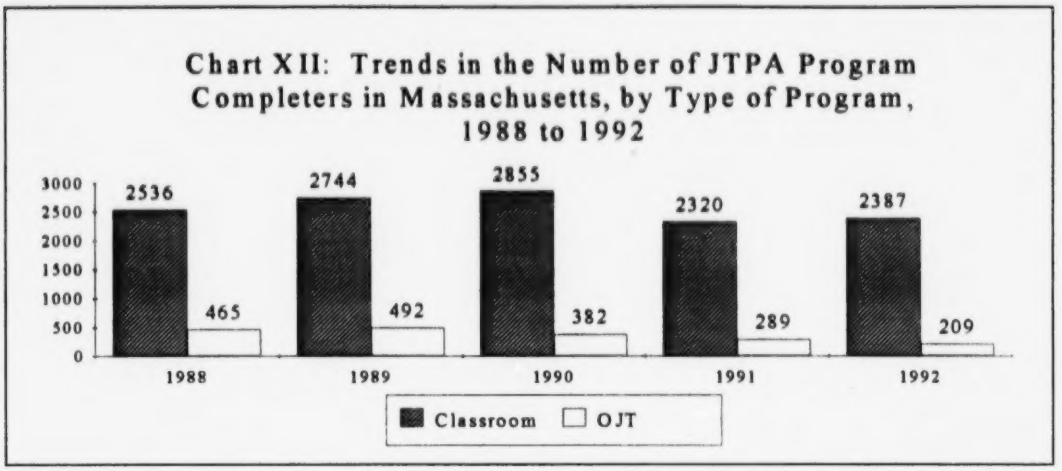
The JTPA skill training programs, including classroom and on-the-job training programs, in Massachusetts are a relatively small component of institutional sources of labor supply in the state. In the context of the more than 13,000 Associate's Degrees, 41,000 Bachelor's degrees, and 20,000 advanced degrees which are awarded each year in the state, along with about 9,000 secondary vocational-technical school graduates per year, the JTPA skill training programs are not a large institutional source of labor supply. When one considers that outside of the on-the-job training programs, most JTPA services are delivered by community colleges, secondary vocational agencies, community based organizations, or private firms, local JTPA programs do not have their own separate "identity" among employers as an education or training organization.

As the findings in Chart XI reveal, the overall size of the JTPA Title II A adult skills training program fluctuated markedly over the course of the recession. Between 1988 and 1990, the number of JTPA skill training completers increased by 236, a rise of nearly 8 percent. Yet, between 1990 and 1992, the period of most severe job loss in the state, skill training completions declined by 641 persons or nearly 20 percent. The decline in JTPA completions between 1990 and 1992 stands in sharp contrast to the behavior of other job seekers in the state. We noted

earlier that rather than immediately entering the job market during economic decline, many recent graduates of both colleges and universities as well as vocational-technical programs opted to continue their education. Given the increased school-going behavior of graduates from most educational institutions in the state during the recession, we expected that JTPA enrollments and completions would have increased, particularly over the 1990 to 1992 period, rather than declining rather sharply.



Findings in Charts XII and XIII examine trends in JTPA program completions by type of program. These data reveal that a sharp reduction in OJT completions accounted for nearly two thirds of the total reduction in skill training completions that occurred between 1988 and 1992. As total skill training completions declined by 405 or about 14 percent over the period, the number of OJT completions declined by 256, or more than 55 percent, with classroom training completions declining by less than 6 percent (149 completers). Thus, this very sharp reduction in the number of individuals completing OJT programs constituted the bulk of the overall reduction in skill training activities. This, in turn, altered the classroom training/OJT program mix of JTPA programs in the state. As Chart XIII reveals, OJT shares of total completions fell from 15 percent to 8 percent. By 1992 nearly 92 percent of all skill training program completers graduated from classroom training programs.



The reduction in skill training activities in the state was not equal across all local service delivery areas. In fact, the Boston and Metro North SDAs accounted for most of the reduction. The Boston SDA alone accounted for over one-half of the decline in statewide skill training activities between 1988 and 1992 (Table 7). All of Boston's decline, however, was in classroom training program completions since the Boston SDA had no OJT program completions over the entire 1988 to 1992 period (Table 8). Had the Boston SDA not reduced its classroom training programs, statewide classroom training activities would have actually increased instead of declining over the period.

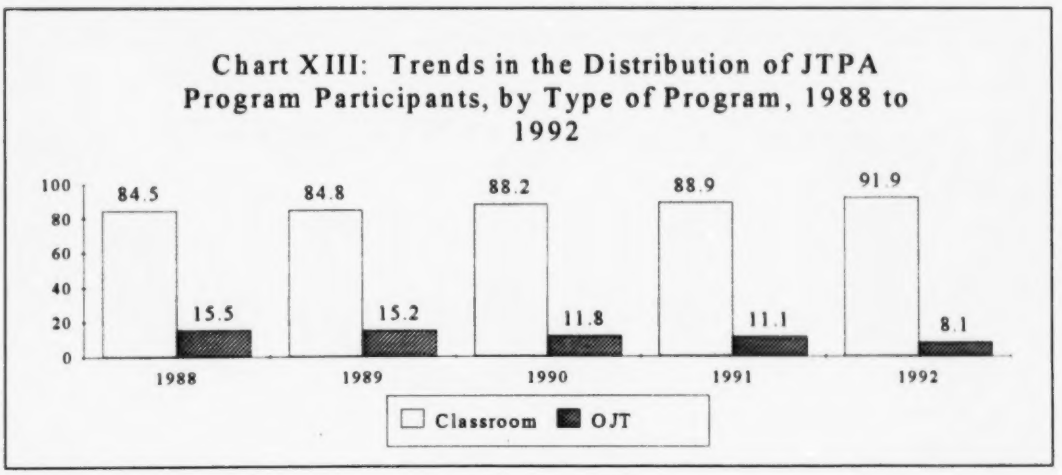


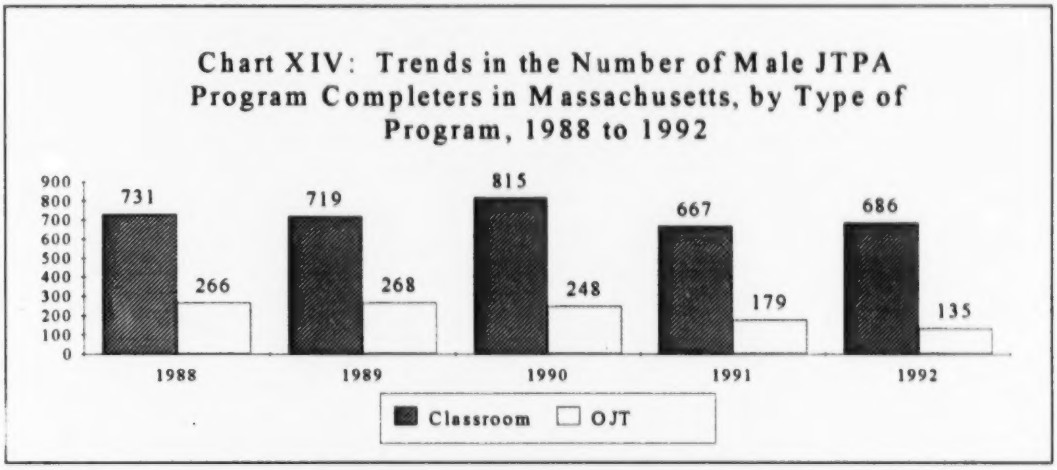
Table 7: Trends in the Total Number of Massachusetts JTPA Program Completers, by SDA, 1988 to 1992

SDA	1988	1989	1990	1991	1992	Absolute Change 88 to 92	Relative Change 88 to 92
Berkshire	145	134	143	98	90	-55	-37.9
Boston	438	293	354	250	176	-262	-59.8
Bristol	299	323	469	292	215	-84	-28.1
Brockton	104	87	110	123	141	37	35.6
Franklin Hampshire	96	101	72	45	70	-26	-27.1
Hampden	321	332	259	282	345	24	7.5
Lower Merrimack Val.	239	304	217	227	214	-25	-10.5
Metro North	196	208	220	75	87	-109	-55.6
Metro Southwest	144	216	219	231	169	25	17.4
New Bedford/Cape	218	295	286	238	222	4	1.8
Northern Middlesex	114	125	143	133	128	14	12.3
North Worcester	192	191	145	104	219	27	14.1
South Coastal	146	197	193	133	128	-18	-12.3
Southern Essex	131	198	212	247	244	113	86.3
South Worcester	218	232	195	131	148	-70	-32.1
Total	3001	3236	3237	2609	2596	-405	-13.5

Table 8: Trends in the Number of Massachusetts JTPA Program Completers Participating in Classroom Training, by SDA, 1988 to 1992

SDA	1988	1989	1990	1991	1992	Absolute Change 88 to 92	Relative Change 88 to 92
Berkshire	42	64	70	57	37	-5	-11.9
Boston	438	293	354	250	176	-262	-59.8
Bristol	269	282	446	283	213	-56	-20.8
Brockton	62	70	81	103	123	61	98.4
Franklin Hampshire	46	56	50	28	54	8	17.4
Hampden	315	324	255	280	345	30	9.5
Lower Merrimack Val.	214	283	206	216	214	0	0.0
Metro North	180	195	205	67	83	-97	-53.9
Metro Southwest	132	198	205	223	169	37	28.0
New Bedford/Cape	161	191	216	135	164	3	1.9
Northern Middlesex	108	117	135	126	120	12	11.1
North Worcester	162	114	111	83	202	40	24.7
South Coastal	135	188	184	133	128	-7	-5.2
Southern Essex	100	170	166	223	223	123	123.0
South Worcester	172	199	171	113	136	-36	-20.9
Total	2536	2744	2855	2320	2387	-149	-5.9

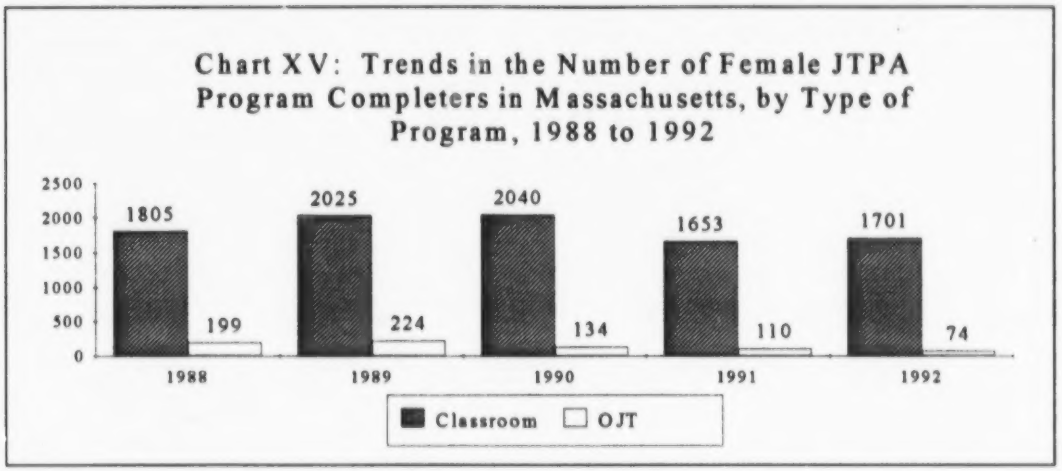
Findings in Table 9 examine the SDA components of the sharp reduction in OJT completions in the state. This table reveals that by 1992 a total of five SDAs had no OJT program completers at all, with the two major exceptions being the New Bedford/Cape & Islands and Northern Worcester SDAs. All other SDAs sharply curtailed their OJT activities. Part of the explanation for the marked reduction, and in some cases elimination, of OJT skill training programs may be associated with changes in U.S. Department of Labor policy regarding OJT programs. One observer in Massachusetts wrote that the "U.S. DOL's intent is clearly to make OJT contracting as difficult as possible."[7]



The reduction in OJT programs was felt particularly hard by women. Between 1988 and 1992, while male OJT completions fell by 49 percent, female OJT completions dropped by 63 percent (Chart XIV and Chart XV). During all of 1992, only 74 women completed OJT programs across the state. Findings from earlier national evaluation studies suggest that OJT generates much larger employment and earnings gains for women than classroom training.[8] The shift away from OJT, especially for women, should be substantively reviewed by Regional Employment Board members. The elimination of OJT removes a unique and historically effective tool from the JTPA adult services mix.

Table 9: Trends in the Number of Massachusetts JTPA Program Completers Participating in On-the-Job Training, by SDA, 1988 to 1992

SDA	1988	1989	1990	1991	1992	Absolute Change 88 to 92	Relative Change 88 to 92
Berkshire	103	70	73	41	53	-50	-48.5
Boston	0	0	0	0	0	0	
Bristol	30	41	23	9	2	-28	-93.3
Brockton	42	17	29	20	18	-24	-57.1
Franklin Hampshire	50	45	22	17	16	-34	-68.0
Hampden	6	8	4	2	0	-6	-100.0
Lower Merrimack Val.	25	21	11	11	0	-25	-100.0
Metro North	16	13	15	8	4	-12	-75.0
Metro Southwest	12	18	14	8	0	-12	-100.0
New Bedford/Cape	57	104	70	103	58	1	1.8
Northern Middlesex	6	8	8	7	8	2	33.3
North Worcester	30	77	34	21	17	-13	-43.3
South Coastal	11	9	9	0	0	-11	-100.0
Southern Essex	31	28	46	24	21	-10	-32.3
South Worcester	46	33	24	18	12	-34	-73.9
Total	465	492	382	289	209	-256	-55.1



Distribution of JTPA Program Completers by Occupational Area of Training

In tracking the occupational areas of program completers, JTPA staff utilize the Standard Occupational Classification system developed by the U.S. Department of Commerce. This classification undergoes periodic changes to update the system, with the last such update occurring in 1980. Unfortunately, some JTPA offices continued to use the 1977 version of the system in coding the program areas of their terminees and completers. Where possible, we have converted these 1977 codes into the appropriate 1980 title and where we have been unable to find a match between the two versions, the records have been left out of the analysis.

Between 1988 and 1992, Massachusetts JTPA program completers received training in 44 major (two-digit SOC) occupational areas. Of these, the top ten largest accounted for 83.4 percent of all completers in 1988, rising to 91.5 percent in 1992. The largest of these major groups was Administrative Support occupations, SOC 46/47, which made up 48.6 percent of all completers in 1988, dropping to 44.3 percent in 1992. As Chart XVI and Chart XVII show, there has been very little variation in the composition of the top ten major occupational groups, with eight of the top ten areas in 1988 still in the top ten in 1992 Where there was considerable change, though, was in the percent distribution within the top ten occupations.

Charts XVI and XVII show, the shift from 1988 to 1992 in the percent of all program completers who received training in the top ten major occupational areas. The largest single area over the five year period, administrative support occs, dropped slightly from just under 49 percent to 44.3 percent. The second largest area in 1988, Services, Except Private Household Services (SOC 52), had only 9 percent of total completers in 1988 but by 1992 had grown by over 14 percentage points to 23.4 percent. This major occupational sector is dominated by occupations concerned primarily with food and beverage preparation, serving and catering, hotel, motel, and office building services, cosmetologist and hairdressers, and assisting health practitioners. A more detailed examination of completers in this sector, undertaken below, reveals that the growth in this major sector was dominated by health practitioners' assistants. In fact, of the ten largest major areas in 1988 only three registered positive growth in their proportion of all completers by 1992. In addition to SOC 52, Mechanics and Repairers grew from 4.0 to 4.4 percent, and Health Technologists and Technicians increased its share from 2.4 to 3.9 percent. At the same time, the third largest occupational group in 1988, Fabricators and Assemblers, declined from 4.9 to 2.8 percent, #4, Construction Trades, dropped from 4.3 to 3.8, #6, Machine Setup Operators, went from 3.1 to 2.3 percent, #8 Precision Production Occs, dropped by over 50%, from 2.4 to 0.8 percent, and Miscellaneous Occupations, and Machine Operators and Tenders declined by 1.3 and 0.8 percent respectively.

Distribution of Completers by Detailed Occupation

The previous section examined trends in the broader categories of occupational training offered by Title II A adult programs between 1988 and 1992. The data revealed that about half of all skill training undertaken by JTPA programs was focused on clerical labor markets. Even as labor market conditions deteriorated between 1988 and 1992, clerical training continued to dominate the skill training services mix. The information provided in Charts XVIII and XIX provide insight into the specific types of occupational training and, in particular, the type of clerical training offered by JTPA programs in both 1988 and 1992. These charts present

Chart XVI: Distribution of Massachusetts JTPA Program Completers, by Major Occupational Area, 1988

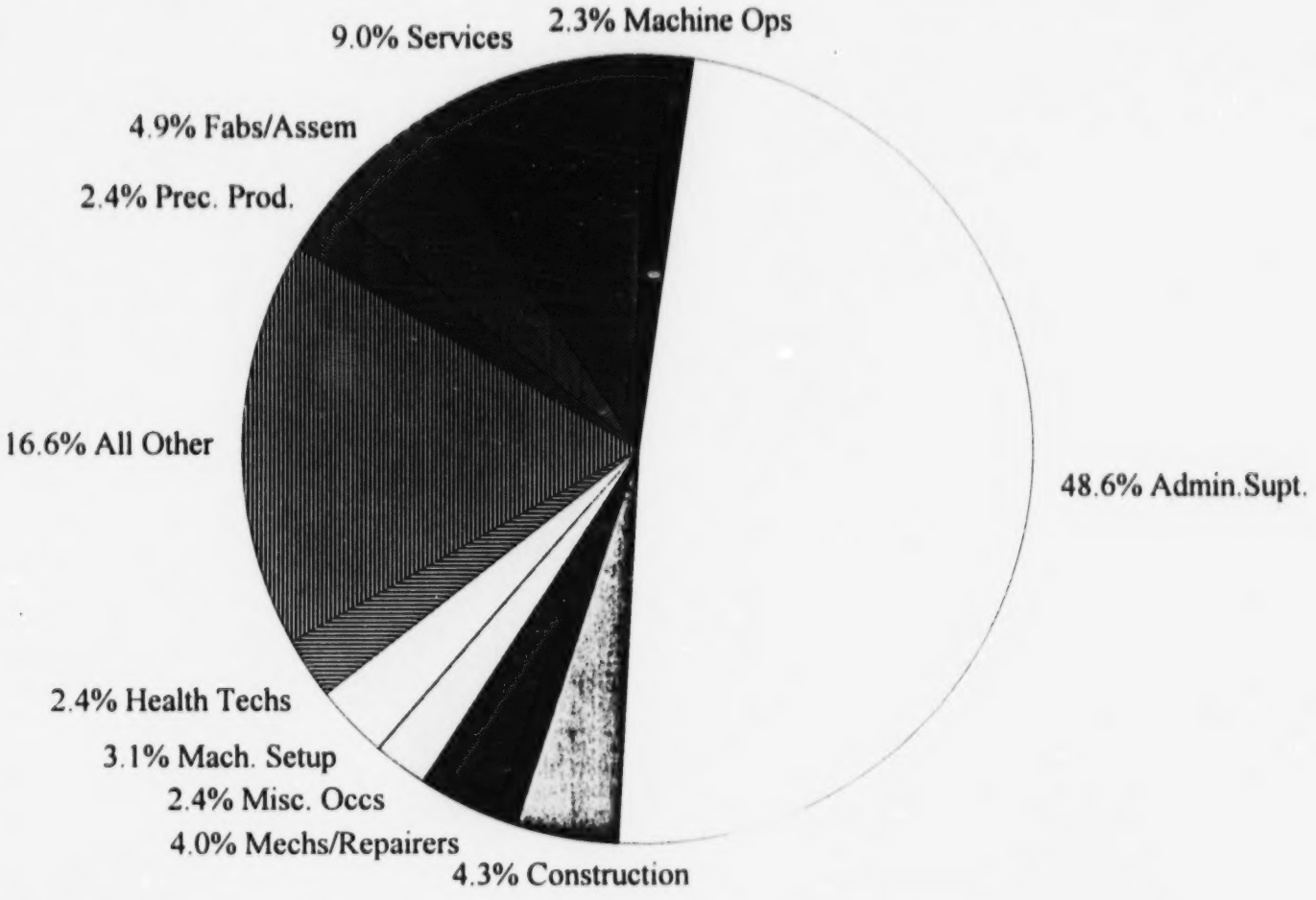
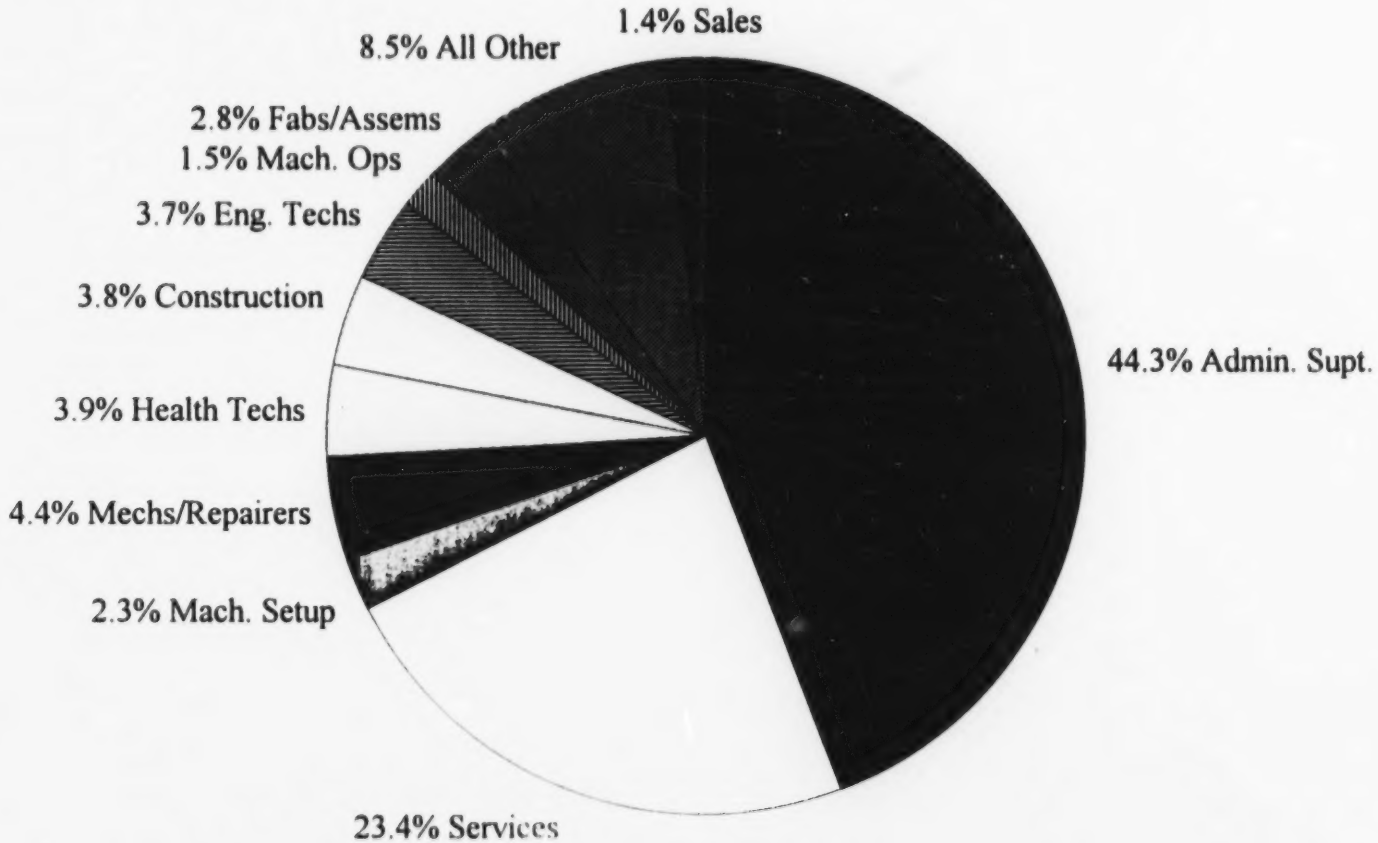
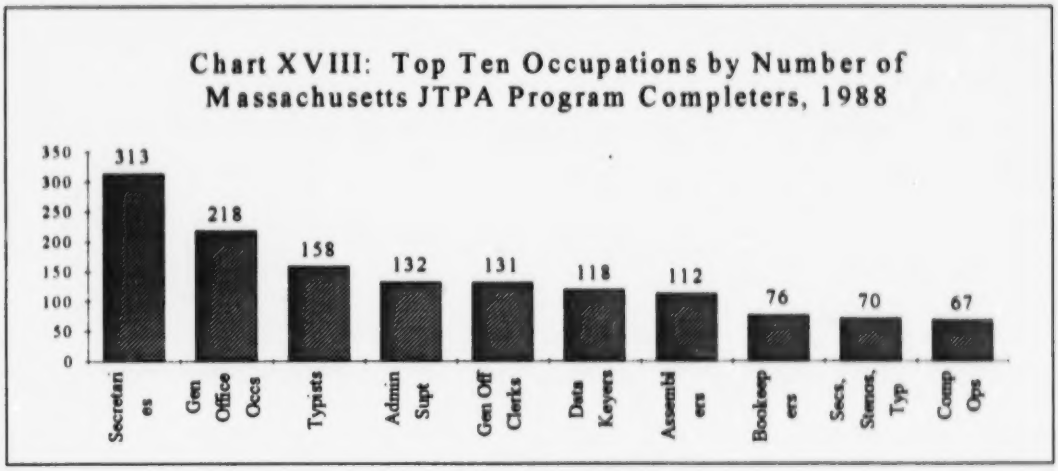


Chart XVII: Distribution of Massachusetts JTPA Program Completers, by Major Occupational Area, 1992



information on the number of completions from the ten largest 4-digit CIP skill training programs offered by JTPA programs in each year.



In 1988 nine of the ten largest detailed occupational training programs offered under JTPA were in clerical fields. In 1992, eight of these nine programs still remained in the top ten, graduating virtually the same number of completers four years later. Findings in Table 10 examine trends in employment among those industries that hire large numbers of clerical workers in Massachusetts (the listing of industries was developed using the Bureau of Labor Statistics Industry-Occupation Matrix for 1991).[9] During the 1984 to 1987 period, these industries experienced considerable employment expansion, adding more than 75,000 jobs. However, with the onset of the recession, most of these industries, with the major exception of health services, experienced considerable employment decline.

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Table 10: 46/47 Administrative Support Occupations

Key Industry Employers

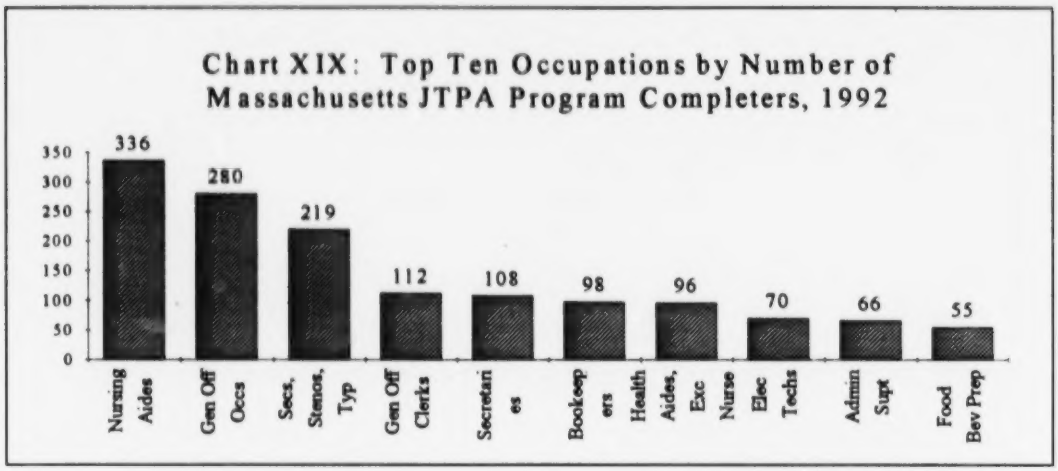
81 Legal Services
80 Health Services
82 Education, Public and Private
73 Business Services
50/51 Wholesale Trade
87 Engineering & Mgmt Services
86 Membership Organizations
93 Local Gov, Exc. Educ/Hosps
92 State Gov., Exc. Educ/Hosps

Recent Employment Developments

SIC	1984	1987	Absolute Change	Relative Change	1988	1991	Absolute Change	Relative Change
81	18637	25550	6913	37.1	26456	27029	573	2.2
80	232164	244083	11919	5.1	251440	276864	25424	10.1
82	83726	84285	559	0.7	87708	91077	3369	3.8
73	146081	191007	44929	30.8	161591	139793	-21798	-13.5
50/51	150202	171778	21576	14.4	176730	158422	-18308	-10.4
87					95428	93732	-1696	-1.8
86	18857	20604	1747	9.3	21438	20560	-878	-4.1
93	207388	223247	15859	7.6	227905	214377	-13528	-5.9
92	88495	86738	-1757	-2.0	100067	91901	-8166	-8.2

Projected State Employment Developments

SIC	1984	1987	Absolute Change	Relative Change
81	27000	40000	13000	48.1
80	276600	362300	85700	31.0
82	125500	136600	11100	8.8
73	141400	207900	66500	47.0
50/51	158200	180200	22000	13.9
87	93700	132000	38300	40.9
86	31800	34600	2800	8.8
93	91900	94800	2900	3.2
92	60200	64500	4300	7.1



A closer look at Chart XIX reveals that two health-related occupational skill training programs became major sources of skill training between 1988 and 1992. By 1992 Nursing Aides, Orderlies, and Attendants programs were the single largest JTPA adult training program in the state with 336 graduates, accounting for about 1 out of every 8 JTPA completions. Health Aides, except Nursing programs had 96 completions in this year, ranking the program the seventh largest in the state. Findings in Tables 11 and 12 again provide information on key industry sources of jobs for graduates of these programs. These data reveal rapid job growth in the health sector during the 1988-1991 recessionary period. In fact, as job loss mounted, employment in the health industry increased by more than 25,000 jobs in just three years, an increase of over 10 percent. These findings suggest that while JTPA adult programs did maintain their clerical programs in large measure throughout the recession, there were considerable adjustments in their non-clerical training program services mix with a substantial increase in the nursing aide occupations.

Table 11: 5236 Nursing Aides, Orderlies, and Attendants

	1992	1988	Key Industry Employers
Share of Completers	12.9%	1.1%	80 Health Services
# of Completers	336	32	92 State Gov. Exc. Ed/Hosps
			88 Private Households
			83 Social Services

Recent Employment Developments

SIC	1984	1987	Absolute Change	Relative Change	1988	1991	Absolute Change	Relative Change
80	232164	244083	11919	5.1	251440	276864	25424	10.1
92	88495	86738	-1757	-2.0	100067	91901	-8166	-8.2
88	2977	2935	-42	-1.4	3013	3291	278	9.2
83	47169	57989	10820	22.9	61907	63900	1993	3.2

Projected State Employment Developments

SIC	1991	2005	Absolute Change	Relative Change
80	276600	362300	85700	31.0
92	60200	64500	4300	7.1
88				
83	63600	90700	27100	42.6

Table 12: 5233 Health Aides Except Nursing

	1992	1988	Key Industry Employers
Share of Completers	3.7%	0.5%	80 Health Services
# of Completers	96	14	83 Social Services
			41 Local/Interurban Passenger Trans
			93 Local Gov., Exc. Educ./Hosp.
			72 Personal Services

Recent Employment Developments

SIC	1984	1987	Absolute Change	Relative Change	1988	1991	Absolute Change	Relative Change
80	232164	244083	11919	5.1	251440	276864	25424	10.1
83	47169	57989	10820	22.9	61907	63900	1993	3.2
41	15813	17407	1594	10.1	18239	15726	-2513	-13.8
93	207388	223247	15859	7.6	227905	214377	-13528	-5.9
72	29170	32703	3533	12.1	30481	28979	-1502	-4.9

Projected **State Employment Developments**

SIC	1991	2005	Absolute Change	Relative Change
80	276600	362300	85700	31.0
83	63600	90700	27100	42.6
41	15600	18100	2500	16.0
93	91900	94800	2900	3.2
72	29100	34300	5200	17.9

Next Steps

The findings on JTPA Title II A adult programs described above clearly need to be further analyzed. First of all, a further examination of the SOC coding methods employed by local SDA staff needs to be undertaken. Some inconsistencies appear to exist in SDA coding activities that may substantially reduce the quality of the completions data that are produced by the JTPA MIS system. Secondly, on a more substantive note, we need to develop an understanding of the reasons why skill training program completions declined during the last two years of the recession. In particular, we need to understand why OJT completion activity declined so sharply. While there is reason to believe that federal policies may have contributed to this reduction, it is important to note that as some SDAs eliminated their OJT programs, others chose to maintain their programs. We need to better understand the factors that influenced these decisions. Third, we need to develop an improved understanding of how SDAs make their occupational services mix decisions. Despite the absence of very clear signals from the labor market, the JTPA system largely maintained its clerical programs. In contrast, the system did respond rapidly to employment increases in the health industry in the state.

Over the next several months we will begin to conduct a number of interviews with federal state and local officials responsible for JTPA policy, programming and operations. These interviews will be designed to gain insight into the decision making criteria employed by these leaders when making resource allocation decisions during the economic recession.

ENDNOTES

1. Commonwealth of Massachusetts, Choosing to Compete: A Statewide Strategy For Job Creation and Economic Growth, Collaboration of the Executive Office of Economic Affairs and the University of Massachusetts, 1993.

2. Fogg, Neeta, Harrington, Paul, and Sum, Andrew, The JTPA Funding Allocation Amendments of 1992: Implications for JTPA Funding in Massachusetts, Center for Labor Market Studies, May 1993

3. The actual training-related employment rate for vocational-technical secondary graduates is reported at only 27 percent nationally. See: Hamilton, Stephen F. "Is There Life After High School? Developing Apprenticeship in America." in The Harvard Education Letter, July/August, 1990

4. Harrington, Paul, and Sum, Andrew, "The New England Labor Market: A Decade of Change," Connections, New England's Journal of Higher Education and Economic Development, June/July 1993

5. Harrington, Paul, et al, Career Counseling and Job Placement During Economic Recession, Center for Labor Market Studies, October 1991

6. Massachusetts Taxpayers' Foundation Employment Projections, March 1993

7. Memorandum from Jack King to Nils Nordberg On the Job Training Policy, Massachusetts Department of Employment and Training, February 20, 1991

8. Taggart, Robert, A Fisherman's Guide: An Assessment of Training and Remediation Strategies, W.E. Upjohn Institute for Employment Research, October, 1981

9. For a detailed discussion of the method employed, see: Harrington and Williams, Labor Market Developments and Vocational-Technical Program Structure in Massachusetts, Massachusetts Department of Education, Spring, 1993.

Appendix A: Percent Distribution of Secondary Vocational Education Graduates, by Program, 1987-1991

Program	CIP Code	1987	1988	1989	1990	1991	1987-91
Agribusiness/Agricultural Prod.	01	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Horticulture, General	01.0601	24.1%	20.5%	22.9%	26.6%	27.1%	24.2%
Animal Production	01.0302	15.9%	16.8%	15.8%	18.5%	15.5%	16.5%
Ornamental Horticulture	01.0603	10.7%	6.4%	14.1%	5.9%	8.9%	9.2%
Landscaping	01.0605	7.8%	5.7%	4.9%	8.5%	5.2%	6.4%
Agricultural Production, Gen.	01.0301	7.4%	6.4%	7.4%	6.3%	6.9%	6.9%
Agricultural Mechanics, Gen.	01.0201	6.3%	6.0%	6.7%	4.1%	3.4%	5.3%
Misc. Agriculture	01.0398	6.3%	10.7%	6.0%	5.5%	15.1%	8.8%
Agribusiness & Agr. Prod., Oth	01.9999	5.6%	4.7%	4.6%	5.9%	6.2%	5.4%
Aboriculture	01.0602	5.2%	3.4%	3.9%	3.3%	4.8%	4.1%
Pet Grooming	01.0504	4.4%	6.4%	4.9%	4.4%	3.4%	4.7%
Nursery Operations & Mgmt.	01.0606	4.1%	7.4%	6.0%	7.7%	0.0%	5.0%
Agr. Food Products & Proc.	01.0402	1.5%	4.4%	1.8%	2.6%	2.7%	2.6%
Crop Production	01.0304	0.4%	0.0%	1.1%	0.0%	0.0%	0.3%
Agricultural Production, Other	01.0399	0.4%	1.3%	0.0%	0.7%	0.7%	0.6%
Marketing and Distribution	08	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Marketing, General	08.0708	98.3%	98.4%	98.1%	97.6%	97.0%	98.0%
Financial Services	08.0401	0.9%	0.7%	0.6%	1.3%	1.0%	0.9%
Apparel & Accessories, General	08.0101	0.8%	1.0%	0.9%	1.0%	1.0%	0.9%
Marketing and Distribution, Oth	08.9999	0.0%	0.0%	0.4%	0.1%	1.0%	0.3%
Computer and Info. Sciences	11	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Computer Programming	11.0201	82.3%	82.6%	68.1%	64.3%	60.9%	72.4%
Information Sciences & Systems	11.0401	12.4%	11.4%	11.9%	12.2%	8.0%	11.2%
Data Processing	11.0301	5.3%	6.0%	20.0%	23.5%	31.1%	16.4%
Consumer, Personal, Misc. Serv.	12	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Cosmetology	12.0403	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

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Eng. & Eng. Related Technologies	15	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Electronic Technology	15.0303	93.0%	87.2%	90.5%	88.2%	88.8%	89.8%
Architectural Design & Const.	15.0101	3.2%	4.9%	4.3%	5.3%	3.8%	4.2%
Electrical Technology	15.0302	1.8%	3.0%	2.0%	4.0%	5.9%	3.1%
Eng. & Eng. Rel Tech. , Misc	15.0601	1.6%	1.6%	1.8%	1.1%	0.0%	1.3%
Electromechanical Technology	15.0403	0.3%	3.3%	1.3%	1.3%	1.5%	1.5%
Allied Health	17	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Practical Nursing	17.0605	34.9%	34.1%	38.9%	39.6%	39.8%	37.5%
Community Health Work	17.0402	26.6%	27.0%	25.1%	23.4%	24.1%	25.2%
Nursing Assisting	17.0602	15.5%	16.3%	13.5%	14.8%	11.6%	14.3%
Physician Assisting	17.0508	11.4%	11.7%	12.7%	8.3%	8.7%	10.6%
Dental Assisting	17.0101	7.3%	7.1%	6.9%	6.2%	7.5%	7.0%
Surgical Technology	17.0211	2.3%	2.4%	2.3%	3.4%	3.5%	2.8%
Ophthalmic Dispensing	17.0701	1.3%	0.5%	0.4%	1.3%	1.6%	1.0%
Medical Laboratory Tech.	17.0309	0.7%	0.8%	0.3%	1.3%	0.9%	0.8%
Medical Laboratory Tech., Oth	17.0399	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Medical Assisting	17.0503	0.0%	0.0%	0.0%	1.7%	2.2%	0.8%
Vocational Home Economics	20	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Food Prod., Mgmt. & Serv., Gen	20.0401	63.7%	64.1%	63.0%	64.2%	60.1%	63.1%
Child Care Mgmt. & Serv., Gen.	20.0201	11.6%	13.8%	12.2%	15.3%	17.1%	14.0%
Clothing Mgmt, Prod & Serv, Ge	20.0301	10.6%	9.4%	12.0%	9.2%	9.4%	10.1%
Chef/Cook	20.0403	10.2%	9.0%	9.0%	8.3%	9.1%	9.1%
Inst,Home Mgmt & Supp Serv,Oth	20.0601	3.4%	3.3%	3.6%	2.9%	3.4%	3.3%
Baking	20.0402	0.5%	0.3%	0.1%	0.1%	0.1%	0.2%
Home Furnish. Mgmt, Prod & Serv	20.0501	0.0%	0.0%	0.0%	0.0%	0.8%	0.1%
Construction Trades	46	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Carpentry	46.0201	36.9%	39.2%	40.1%	41.0%	39.0%	39.2%
Electrician	46.0302	35.1%	34.2%	32.9%	31.9%	32.2%	33.2%
Plumb.,Pipefit.,Steamfit., Gen	46.0501	12.8%	11.8%	11.8%	12.8%	13.0%	12.5%
Painting and Decorating	46.0408	7.1%	7.3%	6.8%	6.4%	6.5%	6.8%
Building & Property Maintenanc	46.0401	4.8%	4.3%	4.9%	4.5%	5.5%	4.8%
Brickmasonry,Block, &Stonemason	46.0102	3.3%	3.2%	3.5%	3.4%	3.8%	3.4%
Mechanics and Repairers	47	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Auto Mechanics	47.0604	50.7%	53.4%	50.5%	48.8%	49.0%	50.6%
Auto Body Repair	47.0603	23.0%	24.0%	27.7%	27.4%	28.0%	25.9%
Heat, Refrig., AC Mechanics, Gen	47.0201	11.4%	11.0%	9.1%	11.7%	12.8%	11.2%

Major Appliance Repair	47.0106	4.6%	2.7%	2.5%	3.6%	2.5%	3.2%
Electrical/Electronic Repair,Oth	47.0199	2.8%	1.9%	1.6%	0.9%	1.5%	1.8%
Diesel Engine Mechanics	47.0605	2.5%	2.2%	2.6%	1.6%	2.1%	2.2%
Small Engine Repair	47.0606	2.0%	2.5%	3.5%	2.6%	1.8%	2.5%
Stationary Energy Sources, Gen	47.0501	1.1%	1.0%	1.3%	1.2%	0.5%	1.0%
Industrial Equip. Maint. & Rep	47.0303	0.7%	0.2%	0.3%	0.2%	0.3%	0.3%
Heavy Equip. Maint. & Repair	47.0302	0.7%	0.6%	0.4%	0.5%	0.5%	0.5%
Mech and Repair, Misc	47.0198	0.5%	0.5%	0.5%	0.8%	0.5%	0.5%
Watch Repair	47.0408	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
Electrical/Electronic Repair,Gen	47.0101	0.0%	0.0%	0.0%	0.8%	0.6%	0.2%
Precision Production	48	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Machine Tool Oper./Machine Sho	48.0503	23.1%	20.8%	22.5%	19.8%	19.8%	21.3%
Graphic & Printing Comm., Gen.	48.0201	20.4%	20.3%	20.5%	23.2%	21.2%	21.1%
Drafting, General	48.0101	16.8%	17.2%	15.1%	17.6%	17.0%	16.7%
Commercial Art	48.0203	8.9%	9.5%	9.2%	8.8%	9.6%	9.2%
Metal Fabrication	48.0504	7.4%	9.2%	9.2%	11.0%	12.7%	9.7%
Sheet Metal	48.0506	7.4%	6.0%	6.0%	4.9%	5.1%	6.0%
Millwork & Cabinet Making	48.0703	7.3%	7.4%	7.5%	6.9%	6.8%	7.2%
Welding	48.0508	5.4%	6.0%	5.1%	3.3%	4.4%	4.9%
Printing Press Operations	48.0208	1.7%	1.7%	2.6%	2.1%	2.3%	2.0%
Upholstering	48.0303	0.9%	1.3%	1.0%	1.1%	0.3%	0.9%
Precision Work, Plastics	48.0604	0.2%	0.3%	0.3%	0.4%	0.0%	0.2%
Metal Patternmaking	48.0505	0.2%	0.0%	0.0%	0.0%	0.0%	0.1%
Commercial Photography	48.0204	0.1%	0.4%	0.2%	0.0%	0.0%	0.1%
Architectural Drafting	48.0102	0.0%	0.0%	0.9%	0.6%	0.5%	0.4%
Mechanical Drafting	48.0105	0.0%	0.0%	0.0%	0.3%	0.3%	0.1%
All Other		100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Marine Maintenance	49.0306	40.9%	34.1%	36.0%	31.6%	28.4%	34.4%
Hotel/Motel Management	06.0701	14.8%	19.5%	13.3%	17.7%	21.6%	17.3%
Radio & TV Prod. & Broadcasting	10.0104	12.5%	12.2%	13.3%	7.6%	10.8%	11.3%
Forestry Prod. & Proc., Gen.	03.0401	12.5%	14.6%	13.3%	10.1%	12.2%	12.6%
Renewable Nat. Resources, Othe	03.9999	11.4%	9.8%	8.0%	11.4%	0.0%	8.3%
Renewable Nat. Resources, Gen.	03.0101	8.0%	9.8%	16.0%	16.5%	20.3%	13.8%
Small Bus. Mgmt. & Ownership	06.1801	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Medical Secretarial	07.0605	0.0%	0.0%	0.0%	5.1%	6.8%	2.3%

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